

**GROWING
MARIJUANA
in
NEW ENGLAND
(and other cold climates)**

by Peter Oakum

Growing Marijuana

in

New England

(and other cold climates)

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Peter Oakum

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The publisher of this book does not take marijuana in any form, nor does he recommend or urge the intake of this or any drug. However, he feels that each person has the right of access to all the knowledge available about the growth and development of all things which can or do come into his or her personal environment.

This book is published in the spirit of intellectual freedom which includes that right of access.

Inside Photography and Drawings by
Peter Oakum

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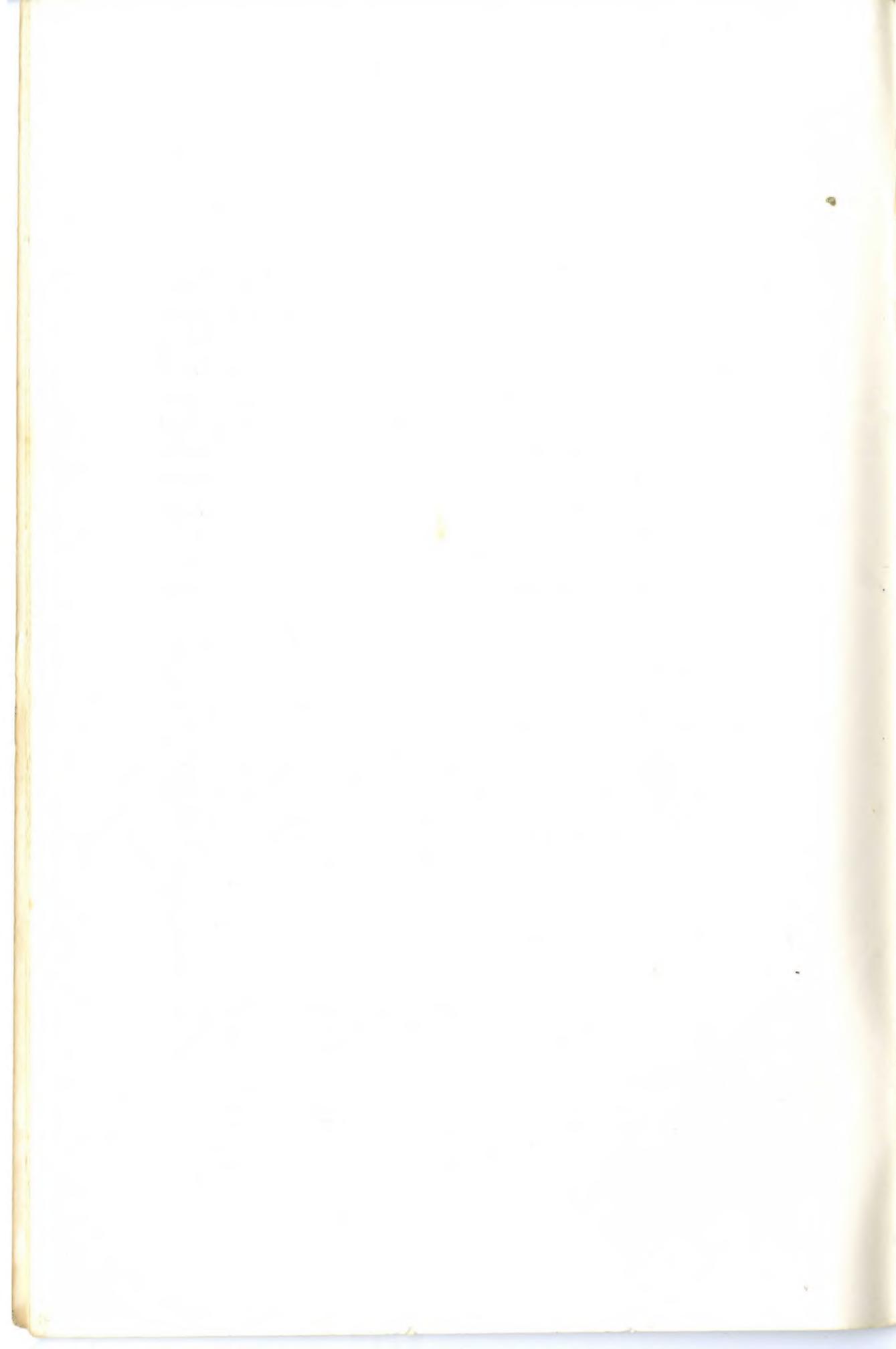
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FOREWORD

My Jamaican friends laughed at me when I told them I grew grass in Massachusetts. And not without good reason. Where they come from, marijuana is not a summer vegetable crop, but a small tree that takes about nine months to grow. They plant their seeds in February and harvest in October. The plants are ten to twelve feet tall and have a stem — or trunk — as thick as a man's wrist. Would that we had such a growing season here! But don't despair; with a little extra care, you can grow high quality "ganja"¹ in New England.

The information presented in this book is both a distillation and a synthesis of my various experiences with *Cannabis sativa*: smoking it, growing it, and observing it, and discussing it with my Jamaican friends. All of these experiences have been important, but it was my conversations with the Jamaicans that added an "international" dimension to my knowledge of the plant. The Jamaicans showed me what the ideal ganja plant looked like, and once that image became fixed in my mind, growing such a plant in New England became my goal.

¹This term comes originally from India, but is now used all over the world. It refers to the dried flowering tops of the female plant. Besides ganja, Indians distinguish two other types of drugs that come from the Marijuana plant: "bhang", which refers to the large leaves of the plant and "charas", which refers to the resin collected from plants specifically cultivated to produce it. Ganja is strong and good for smoking, bhang is weak and good for brewing teas, and charas — what we call hashish — is the strongest of all, and good for visions. Historically speaking, these are the original terms for the various *Cannabis* drugs, and as such they should be used more frequently than they are.

Part I – Starting From Seed

In general, the longer the growing season *Cannabis* has, the more potent it gets. For this reason, planting the seeds inside, in early March, is a good idea. By early May, the plants can be transplanted outside. The extra two months' growth produces more robust plants.

In selecting seeds to plant, it is important to use only those from exceptionally good grass, such as Colombian or South East Asian. The better your seeds, the better your final product will be. There are numerous genetic "strains" of *Cannabis sativa* which differ greatly in their ability to produce intoxicating resins. The range extends from plants that produce almost none (these are good for making rope) to plants that produce excessive amounts (good for making hashish). In between these two extremes lie most of the plants that are sold on the open market as marijuana. This book is concerned with growing plants that come from the seed found in an ordinary bag of good marijuana. If you are lucky enough to get seeds from the special hashish-producing plants of India or Afghanistan, by all means plant them. They will grow well in New England, although they probably won't set seed, since they need an extra long growing season to do so.

The seeds should be sown an inch apart and a half an inch deep in pots or flats that are about four inches deep. Crowding the seeds closer than an inch apart only results in seedlings that are tall and skinny. The soil in which the seeds are planted should be rich, consisting of a mixture of approximately one part soil, one part well-rotted manure or compost, and one part sand (for good

drainage). If you don't have rotted compost, or if you're worried about exposing the seeds to soil diseases (a justifiable worry), use store-bought potting soil that's pre-fertilized and sterile. Water the seeds well the day you plant them, and thereafter when the soil has dried out. Watering the seeds more than this encourages fungi to establish themselves in the soil and rot the new seeds. If all goes well, marijuana plants will be popping out of the soil within a week.

The most difficult aspect of starting plants indoors from seed is that they often grow too tall, too fast. This is usually the result of their not getting enough light. These skinny seedlings are not only weak stemmed and spindly, but also more susceptible to fungal diseases. I feel quite strongly that the inside of a house is one of the worst places to grow marijuana. Certainly, you should germinate the seeds inside, where it's warm, but leaving them there any appreciable length of time will only make them spindly. In most houses, there's just not enough light to provide for the normal, healthy growth of marijuana. Even if you supplement the sunlight in your window with artificial light, the plants still will be tall and skinny because of the lack of environmental stress. Not only is it warmer inside a house than it is outside, but the sunlight is less bright, and there is no wind or rain to knock the plants about. It's a misconception to think the plants need to be pampered. What plants *really* need is to be stressed. Stress, in one form or another, makes a plant's leaves thicker (and more drought resistant); its stem stouter (and more wind resistant). Furthermore, by putting your plants outside soon after they germinate, they won't be shocked when the time comes to be outside permanently.

In general, the best way to raise seedlings is this: sprout them in a warm sunny window. When the first pair of true leaves get to be about an inch long (figure 1), move the plants outside. Leave them there during the day (provided it's above freezing) and bring them in at

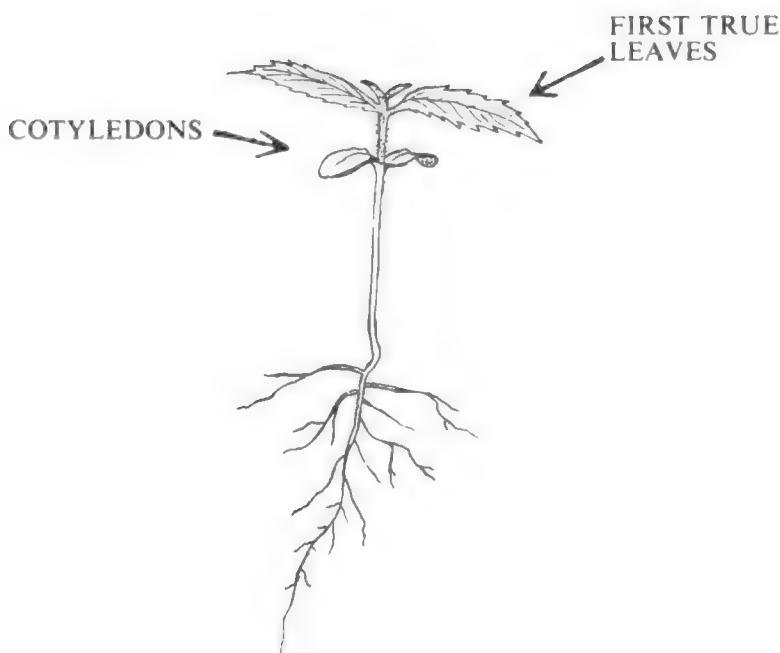


Figure 1: A marijuana seedling.

night. If it's a nice warm night, don't bother taking them in at all. Plants treated in this way won't be as big as greenhouse grown plants, but they will be better adapted to surviving the great outdoors.

Part II – Going Outside

Young marijuana plants can take light frosts without damage, but a heavy frost can kill them. Keeping this in mind, growers have to decide for themselves when the last *Cannabis*-killing frost is likely to hit their area. To help determine this for your area, I have included a map of New England (figure 2) which shows *roughly* when

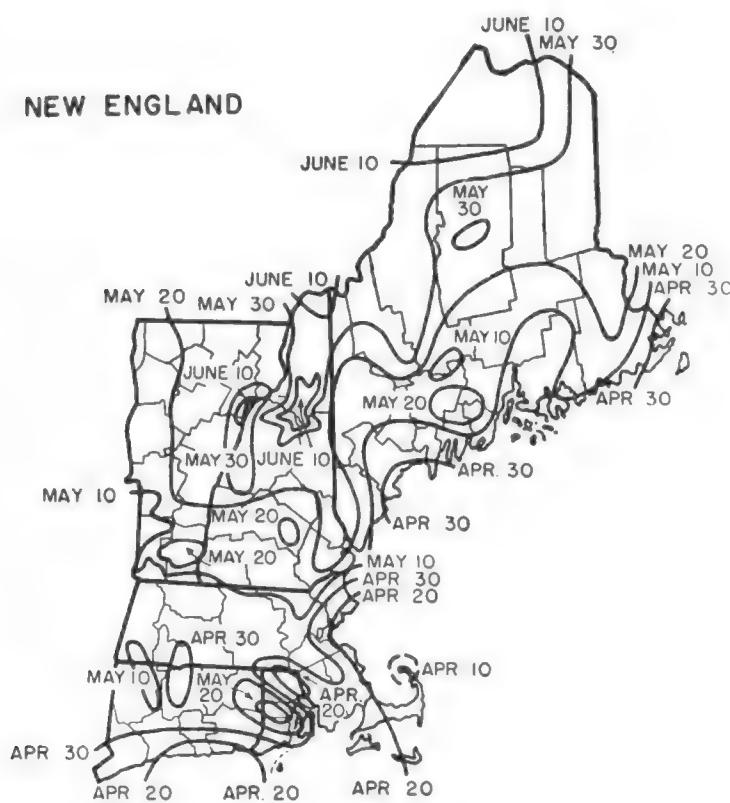


Figure 2: Approximate dates of the last spring frost. (map from U.S. Dept. of Agriculture 1941 Yearbook).

the last killing frost of spring can be expected. Generally speaking, you can put the seedlings in the ground two weeks before the last frost date in your area. I have also included maps for New York, New Jersey and Pennsylvania (figure 3). If you don't like the idea of starting seeds inside, or if it is just not practical to do so, you can sow seeds directly in the ground three weeks before the last frost date.

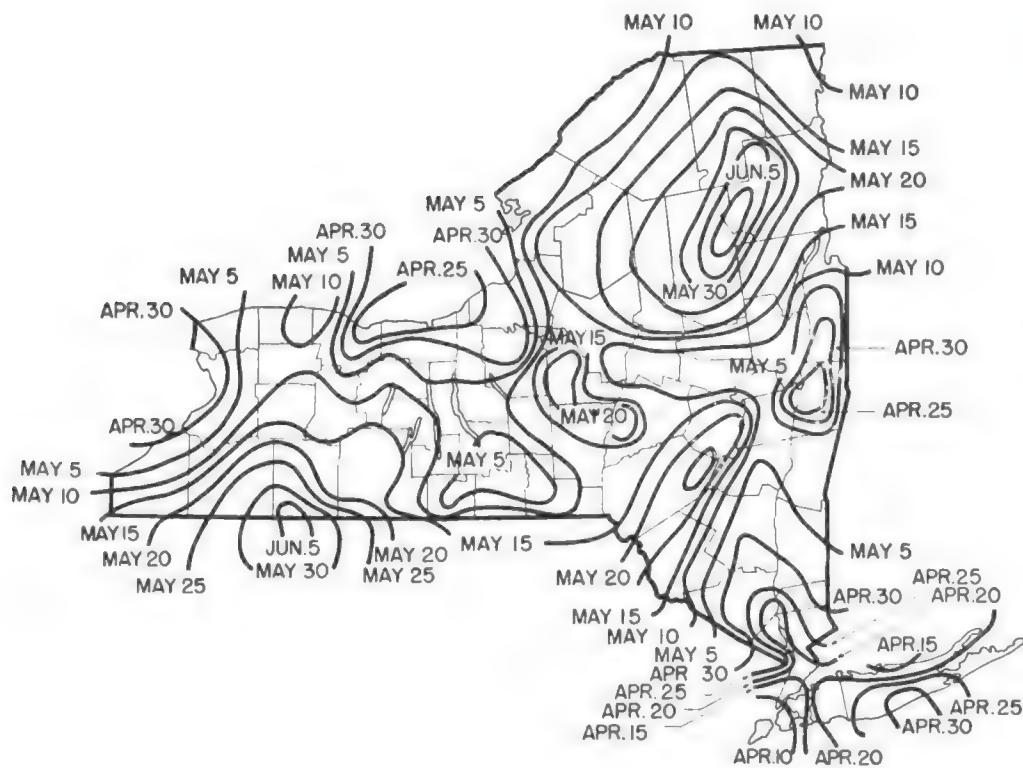


Figure 3a: Approximate dates of the last spring frosts for New York.

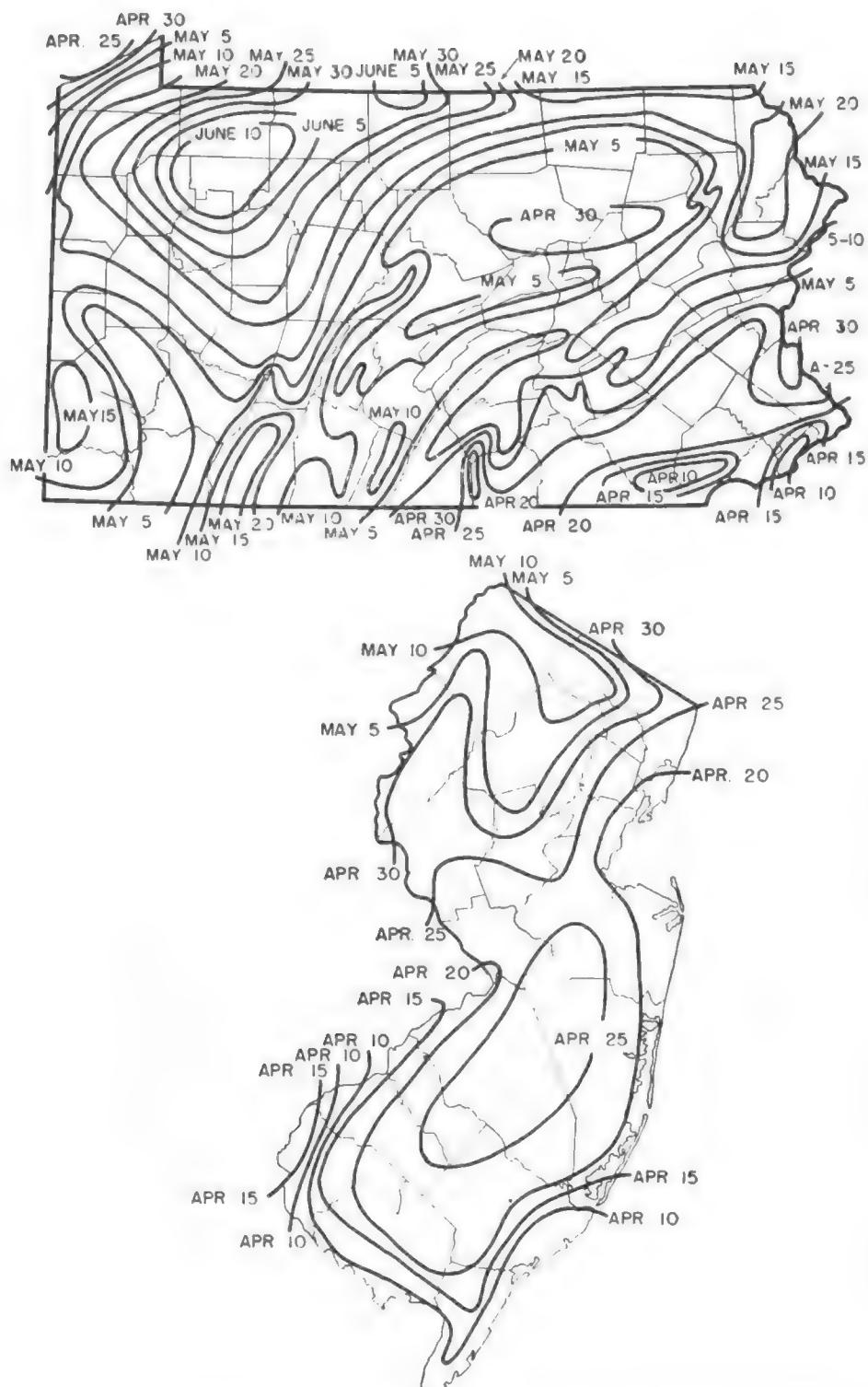


Figure 3b: Approximate dates of the last spring frosts for New Jersey and Pennsylvania.

When transplanting the seedlings, be careful to disturb the roots as little as possible. It's easy to lose the advantage you gained in starting early by being careless here. Transplanting works best if it is done on a cloudy day; it can also be done when it is sunny, provided you put it off until late in the afternoon and water the plants heavily as soon as they go into the ground.

Proper spacing of your seedlings in their permanent bed is of the utmost importance. A healthy, well pruned marijuana plant (see the next section for pruning instructions) requires *at least* two and preferably three feet of room on all sides. It's hard to realize this when you're setting out your little seedlings, but it's really true. The more room you give your plants, the better they'll do. Plants with sufficient space do not crowd each other in competition for nutrients and light. Plants with sufficient room spread *out* rather than *up*. A half dozen well spaced, well pruned plants can out-yield ten to twenty plants crowded into the same area. Controlling your greed during the spring planting will bring rewards during the fall harvest.

The soil into which the seedlings are planted should be moist (but not wet), light (there should be no clay) and well fertilized. Marijuana is a rank-feeder, which means that it loves nutrients in any form. Well rotted horse or cow dung, or vegetable compost, produce great results, not only because of the nutrients they supply, but also because the organic matter they contain contributes to the formation of humus in the soil. If your manure is fresh, it should be worked into the soil a month or so before planting. If you can't get animal manure or compost, and if your soil is poor, you might want to use chemical fertilizer. If you do, the commonly available "5-10-5" or "10-10-10" will work fine.

If you have the space, it's best not to plant *Cannabis* in the same spot more than two years in a row. When you consider that the mass of leaves and flowers you harvest represents nutrients removed from the soil, you can see

why rotation is recommended. If you don't have enough space to rotate from year to year, then you'll have to give the ground a generous dressing of manure every year in order to maintain high yields.

In selecting the site for your marijuana patch, pick a spot that gets a lot of sunlight. The more sun the plants get, the healthier they'll be. Growing a crop of ganja in a patch in the woods doesn't work very well primarily because the surrounding trees always end up taking most of the light.

As well as being sunny, a good marijuana patch should have soil that will stay dry for the entire growing season. Any low spot where water tends to settle is a bad spot for marijuana. Indeed, standing water is always fatal to *Cannabis*. *Cannabis* grows better on a hillside than on a flat area primarily because of the better drainage that the slope provides. In Jamaica, as in most other parts of the world, the highest quality ganja is produced on hill and mountain sides, where the soil is dry and the sun is bright.

To say that *Cannabis* hates standing water is not to say that it hates water. When it is young, it needs a plentiful supply of it. Once it's well rooted, it can get by on much less. When it comes into flower, it needs very little. In many countries, rainfall during the flowering season is considered injurious to a good crop of ganja. *Cannabis* is truly drought loving only during the latter part of its life. The rest of the time, it needs water just like any other plant.

Part III – Tending The Plants

One cultivation practice employed as a matter of course by Jamaicans is “pinching back”. They do it for two reasons: first, it stimulates lateral branches to grow out that ordinarily wouldn’t, and second, it keeps the plants from growing too tall and revealing themselves to the improper authorities. To pinch, you simply cut off the top inch or two of the plant, just above a leaf, with a sharp knife. Figure 4 shows where to pinch your plants.

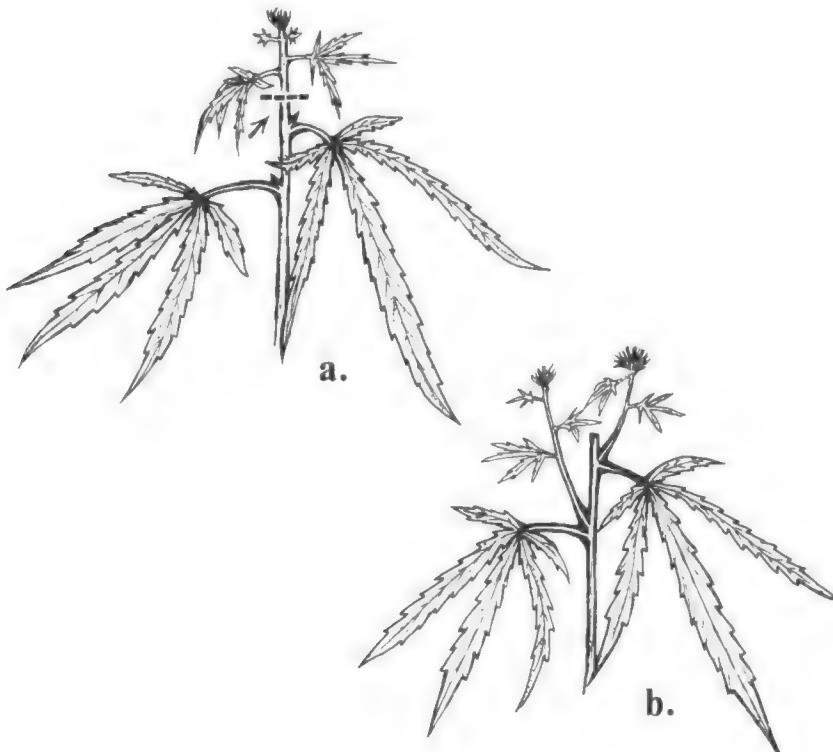


Figure 4: How to pinch your plants.

- a. Cut the top inch or two off.
- b. Replacement shoots growing out after removal of top.

If you don't pinch the marijuana plant, you get a tall, skinny plant with one main axis and a few side shoots. In the unpinched plant, side branches fail to develop because the shoot apex (the growing tip of the plant) produces hormones that suppress their development. By pinching, one removes this regulatory apex and the lateral branches grow out freely. But pinching back is not a one-shot deal. It must be done continually in order to be effective. Roughly speaking, I would say that with every five or six inches of growth, the plant should be pinched. Pinching should be rigorously practiced until the end of July, or into early August, at which point the plant should be left alone to begin flower development. Pinching performed *after* August would only serve to remove the developing (and desirable) flower buds. A properly pinched plant develops in the manner depicted in figure 5. An insufficiently pinched plant develops along the lines of the illustration in figure 6. Once you actually start doing it, you'll find that the plants can actually be sculpted to the size and shape you want.

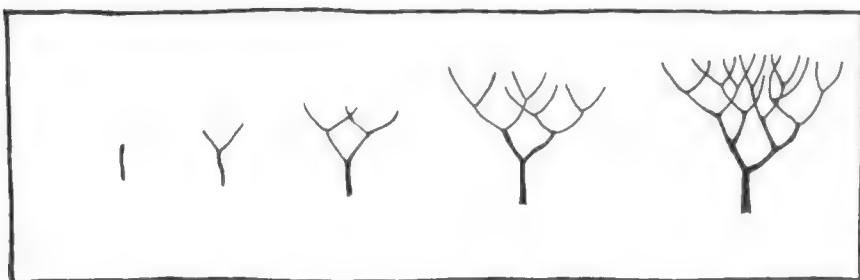
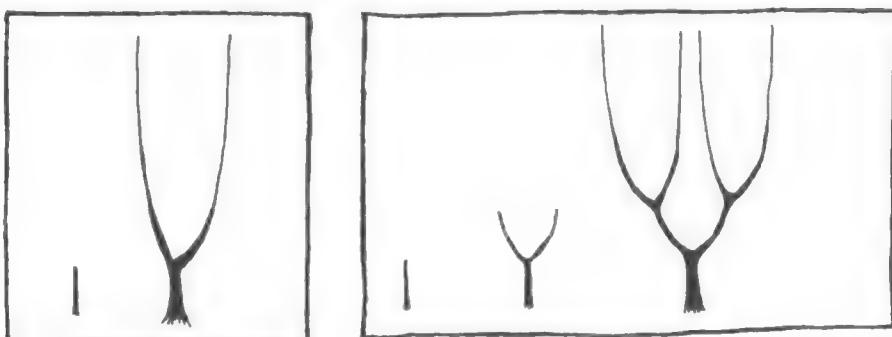


Figure 5: Progressive development of a continuously pinched Ganja plant.

Figure 6: Insufficiently pinched plants.



a. Plant pinched only once.

b. Plant pinched only twice.

It's hard to overcome the feeling that you're damaging your plants by pinching them, but really, you're not hurting the plants. Pinched plants are, in fact, stouter than unpinched ones, are better able to survive adverse conditions (especially drought), and, because of their low profile, are less conspicuous from the road. August tends to be "bust" month in New England because that is when *Cannabis* outgrows its neighbors. In particular, it outgrows corn, the most commonly used screen for hiding the plant. Pinching is one way to avoid this dangerous situation without harvesting the plants early. Another way is to use a plant that grows as tall as, or taller, than *Cannabis* for your screen. My own research indicates that in New England, the Jerusalem artichoke (*Helianthus tuberosus*) is just such a plant (figure 7). The Jerusalem artichoke is a native of North America and was formerly widely grown by Native Americans for its edible, potato-like tubers (figure 8). It is a small-flowered relative of the large-flowered garden sunflower (*Helianthus annuus*). Unlike the sunflower, however, the Jerusalem artichoke is a perennial, coming back year after year from its underground tubers.

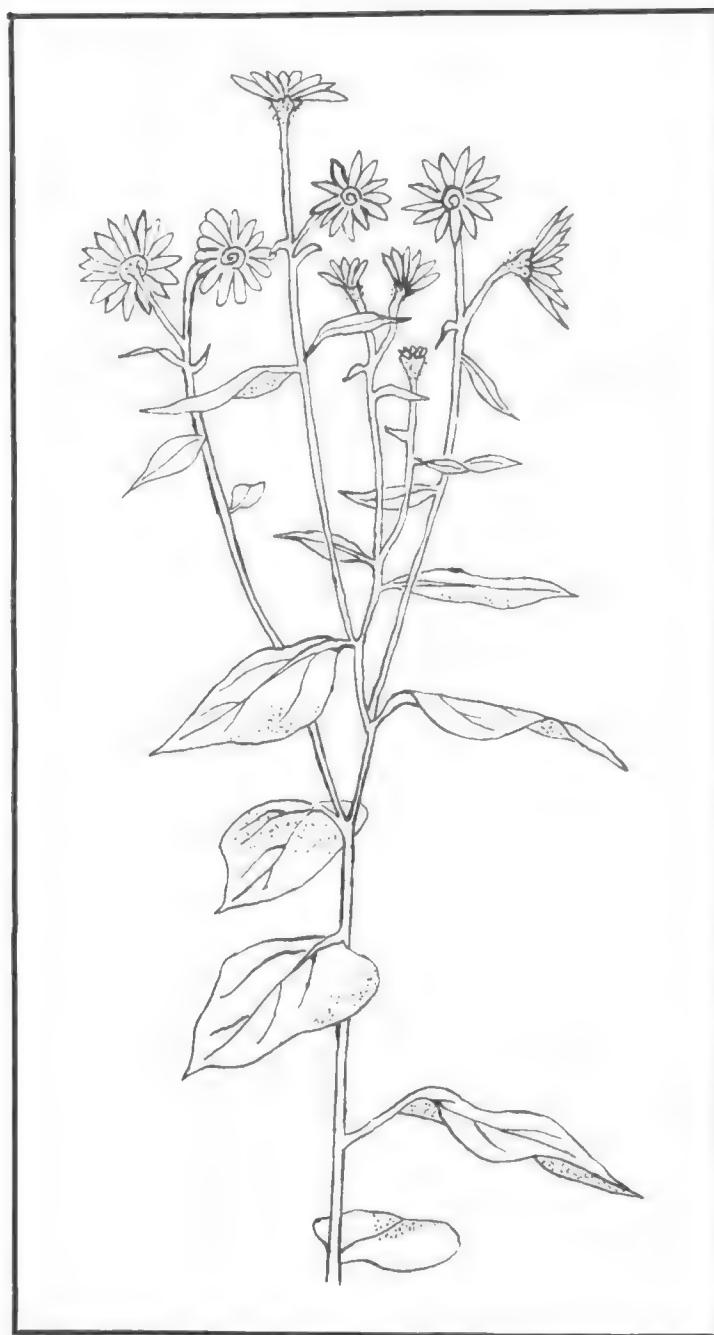


Figure 7: The Jerusalem artichoke (*Helianthus tuberosus*). The illustration shows the top one third (three feet) of the plant.

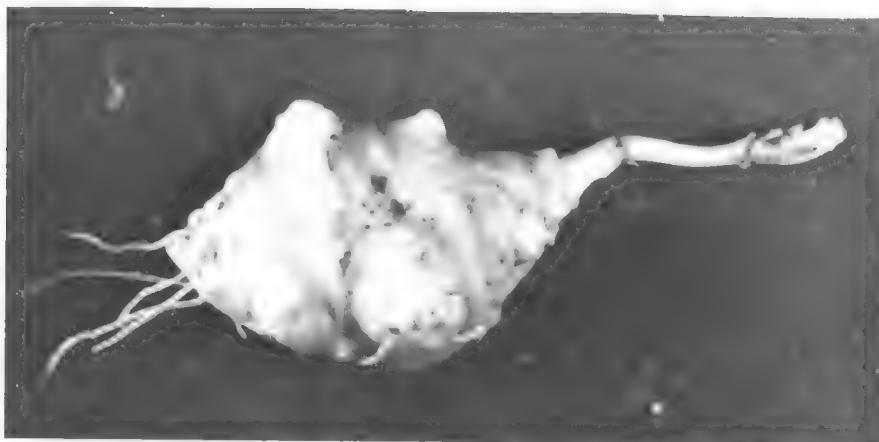


Figure 8. A Jerusalem artichoke tuber, life size.

If grown in good soil, Jerusalem artichokes require little care and can easily grow eight to ten feet tall. This should be more than enough to hide even an insufficiently pinched *Cannabis* plant. Furthermore, the Jerusalem artichoke will stay green and vigorous and healthy right up until it's time to harvest your marijuana. *Cannabis* needs a screen most during the last stages of development, and this is when you can count on *Helianthus tuberosus* to be there. Corn, although an excellent screen for *Cannabis* during its early days, usually starts dying in August, leaving the marijuana completely exposed to public view.

The fact that Jerusalem artichokes can be eaten should not be overlooked in any discussion of the plant. The tubers start forming about the same time as the flowers (in September) and can be harvested anytime after the top of the plant dies down. They keep best if left right in the ground. They can be dug at any point in the winter or spring, whenever the ground has thawed out. Any one plant will give rise to six to twelve tubers, so one gets a progressively denser screen with increasing age. Eating the tubers is an effective way of thinning out the plot and preventing overcrowding, and the consequent stunting, of the plants.

If you live in an area where you don't have to worry about how tall your plants get, there are other methods, besides decapitation, that will stimulate the plants to bush out without reducing their size. The most commonly used method involves removing the bottom-most branches that sprout out spontaneously when the plants are two to three months old. While these branches contribute to the vigor of the young plant, they never really amount to much, because the upper parts of the plant shade them out. At about two months of age, any branches on the lower third of the plant should be removed to stimulate higher up branches to grow out. These upper branches, as opposed to the lower ones, can compete with the main shoot. Just as removing the tops of the branches forced the plants *out*, removing the lower branches forces the growth of the plant *up*. A plant pruned from the top has a bushy appearance, while the plant pruned from the bottom ends up looking like a pine tree.

A third method of pruning *Cannabis*, which should be employed regardless of whether you pinch the tops or the bottoms of your plants, involves removing the large, full-sized leaves. This procedure is understandably hard on the plants, so you shouldn't do it until the plants start to flower (around the middle of August). By this time, the plants will be strong enough to withstand the shock of partial defoliation.

Basically, what you are trying to do is to force the buds along the main stem and the side branches to grow out. It's not a good idea to pick all the leaves off a given plant at one time. This would be too much. Better that you do it in stages, a few leaves one day, a few more the next. Make sure to remove only old leaves that are fully grown. At first, you will find such leaves only on the lower portion of the plant. However, as the season progresses, and the plants start blooming in earnest, you will find more than enough big leaves to remove all over the plant. By waiting until flowering starts before picking the leaves, each little branch that grows out will be

composed mostly of flowers. Also, by waiting until flowering time to pick off the leaves, you will be harvesting them at the peak of their potency.

If you prune your plants faithfully, it's a good idea to fertilize them some time in July. It is important to remember that marijuana loves fertilizer and cannot get too much of it. I myself brew a strong chicken manure tea (made by putting a lot of chicken manure in a barrel, filling it with water and letting it steep for a few days) and occasionally water the plants with it. Chemical fertilizers also work, provided there is sufficient soil moisture to make the nutrients available to the plants.

Part IV – Flowering

In order to understand how to grow marijuana properly, it is good to know a bit about its flowering behavior. Marijuana is a “short-day” plant. This means that as long as there are approximately thirteen hours or more of daylight, the plant produces only leaves. When the days are shorter than thirteen hours, it flowers. This is why September is flowering time no matter when the marijuana was planted. Before your plants flower, all of them will look about the same. Once they bloom, however, you will see that there are two types of plants, the males and the females.

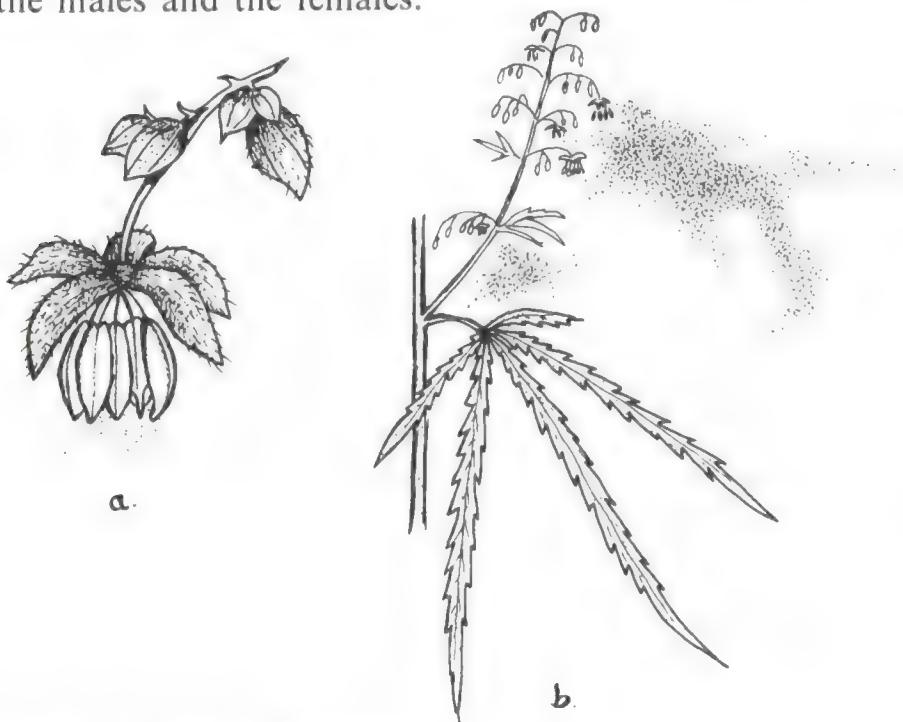


Figure 9: Cannabis sexuality.
a. male flower
b. male plant



Figure 9: Cannabis sexuality
c. female plant
d. female flower

The males generally flower first, producing long spikes of tiny green “pods” (these are the male flower buds) that hang down from the ends of all the branches (figure 9 a & b). One might mistake these “pods” for seeds were it not for the fact that shortly after their appearance, they open up and shed their dusty pollen. After the pollen is released, the males turn brown and die. At this point, or a bit before, they should be harvested. Since they don’t produce much in the way of narcotic resins, they’re better used for making bhang (a tasty milk-based marijuana tea) than for smoking. There are numerous recipes for making bhang, which differ only in minor details. I have selected one that I like, and that is used extensively in India.

BHANG

The strength of the bhang is completely dependent upon the strength of the *Cannabis* used to make it. If made with leaves (the traditional way) the bhang will be mild. If made with flower tops, it will be strong. It's up to you to make it the way you like it.

- (1) Take an ounce of dry marijuana or two ounces of fresh marijuana and crumble or cut it up as fine as possible.
- (2) Pour two or three cups of boiling water over the marijuana and let it sit for about half an hour.
- (3) Mix up any or all of the following spices and grind them in a grinder or pound them with pestle until they form a crumbly mass:

2 tbs black pepper corns*	1 tsp whole allspice
2-3 tsp poppy seed	1 tsp whole cloves
- 1 tsp celery seed	1/4 tsp cumin seed
1 tsp cinnamon	4 or 5 almond kernels - or
1 tsp cardamom seed	1 tsp almond extract
- 1 tsp corriander seed	a pinch of saffron
1 tsp anise seed	1 tsp vanilla extract
- 1 tsp cucumber seed	

*This is the most crucial ingredient of all, and the only one that can not be omitted.

- (4) Separate the marijuana from the water in which it has been steeping by pouring it through a piece of cheesecloth. Set the water aside for later.
- (5) Add the marijuana to the pulverized spices in a large bowl, and pour half a gallon of *whole* milk. It's crucial to use whole milk since the fat it contains attracts the resin in the marijuana and acts to remove it from the leaves.
- (6) Knead and squeeze the marijuana and spices with the milk for ten to fifteen minutes (to remove the resin); then pour the whole mixture through the cheese cloth.
- (7) Knead and squeeze the cheese cloth containing the marijuana and spices in the milk for another fifteen to twenty minutes, or as long as you can stand it.
- (8) Refilter the milk through the cheese cloth and throw away the marijuana / spice mixture.
- (9) Add the marijuana tea set aside earlier (step (4)) to the milk and sweeten the whole thing to taste (about a cup of sugar or honey). Chill in the refrigerator and serve cold.

The female flower is totally different from the male. It consists of two tiny white or reddish threads (the pollen catching stigmas) encased by a green sheath that protects the young ovary (figure 9 c & d). The entire flower is about an eighth of an inch long. There are so many of these tiny flowers packed together on the end of every branch that the branch bends over. These resin laden branches are the flowering tops. Because the female plant has to bear the seed for next year's crop, it lives at least a month longer than the male plant, which bears only pollen. It is during this extra seed ripening month that the females produce the majority of their resins. Specifically, the resin is manufactured by thousands of minute glands located on the sheath that protects the ovary, and with time, the seed. Figure 10 is a close up of one such resin laden branch. Why the



Figure 10: A resin-laden female branchlet.

female marijuana plant should produce resin when it flowers and seeds is not known, but some authors have speculated that it does so to keep birds and other marauding creatures from consuming the developing seed. If this is so, it has obviously not deterred human beings!¹²

In general, the male plant has fewer branches than the female and fewer, paler leaves. The males appear wispy, almost delicate, in comparison to the females, which are full and stout, and which droop down with the weight of resinous flowers and seed.

Resin production is what growing *Cannabis* is all about. All of the effort that goes into growing the plants from April to August does not pay off until September when the females blossom. At this point, the energy that the plant has stored in its leaves over the months goes into producing flowers, resin and seed. As the energy in each leaf gets used up, it turns yellow and falls off. As more leaves fall off, more energy goes into the flowers. One important reason why ganja from Jamaica is better than ganja from New England is that in Jamaica, the total absence of frost gives the plants plenty of time to convert all their leaf energy into flower, resin and seed energy. In New England, it is a rare season, indeed, that ever allows the plant to ripen fully. In general, the warmer and drier the weather at ripening time, the more resin there will be in the final product.

¹²My own theory, unsupported by any "hard" scientific data, is that when the leaves and seed bracts fall to the ground, the resin they contain leaches out and poisons the soil, making it impossible for other seeds to grow. By concentrating the resin around the seed, the parent plant is making sure that the seed has an open space in which to germinate. My reason for saying this is that I seldom see any weeds in soil that has had *Cannabis* grown in it the year before. In the past, this "weed-killing" ability of *Cannabis* has been explained in terms of the dense shade of a *Cannabis* plot choking out the competition. This shade theory, however, does not explain the absence of weeds the following spring.

All of this is not to say that only the female tops contain resin. They just happen to produce more of it than the leaves or the male flowers do. Certainly, you can smoke these other plant parts, and you will get stoned, but it is a weak, harsh high in comparison to the one produced by the female tops. With most New England home grown, only these female tops deserve to be called ganja; everything else is bhang.³

³There are some strains of *Cannabis* that have highly resinous leaves. These strains are used mainly in the production of hashish and kif. Consequently, seeds of these plants don't enter into general commerce. In general, these "hashish" plants are quite small (almost dwarfed) and quite bushy in comparison to the normal, columnar marijuana plant.

Part V – The Harvest

A good marijuana grower has to be patient. More often than not, grass in New England is harvested too early. The reason for this is usually paranoia, about a police bust or about a snoopy, thieving neighbor. Regardless of the reason, early harvesting is always a mistake. The best grass is ripe grass. In Jamaica, ganja is cut when the seed is ripe and the plant is almost dead. At this point, the whole plant is yellow. The larger leaves have all withered up and fallen off (these, remember, are shaved for making bhang) and only the flowering heads, full of seed remain. This is the ideal. If marijuana is picked green, it will get you stoned, but it will be harsher and weaker than ripe marijuana. The grass one buys commercially is brown, not because it was cured in some special way, but because it was picked when it was ripe.

In New England, the danger of frost makes the harvest situation somewhat less ideal. My own experience has shown me that nearly mature marijuana plants, while they can survive light frosts, such as those that usually hit in mid-September, cannot take the heavy frosts of October without suffering damage to the developing seed heads. This does not mean that you have to harvest your plants before a frost hits them. It's okay to let them take one heavy frost (they'll stay green), provided you pick the plants before the damaged tissues start to break down. The sooner they are picked after the frost, the better. Check figures 11 and 12 for the approximate date of the first heavy (killing) frost in your area, and, with the Jamaican ideal uppermost in mind,

NEW ENGLAND
AVERAGE DATES OF FIRST KILLING FROST IN FALL

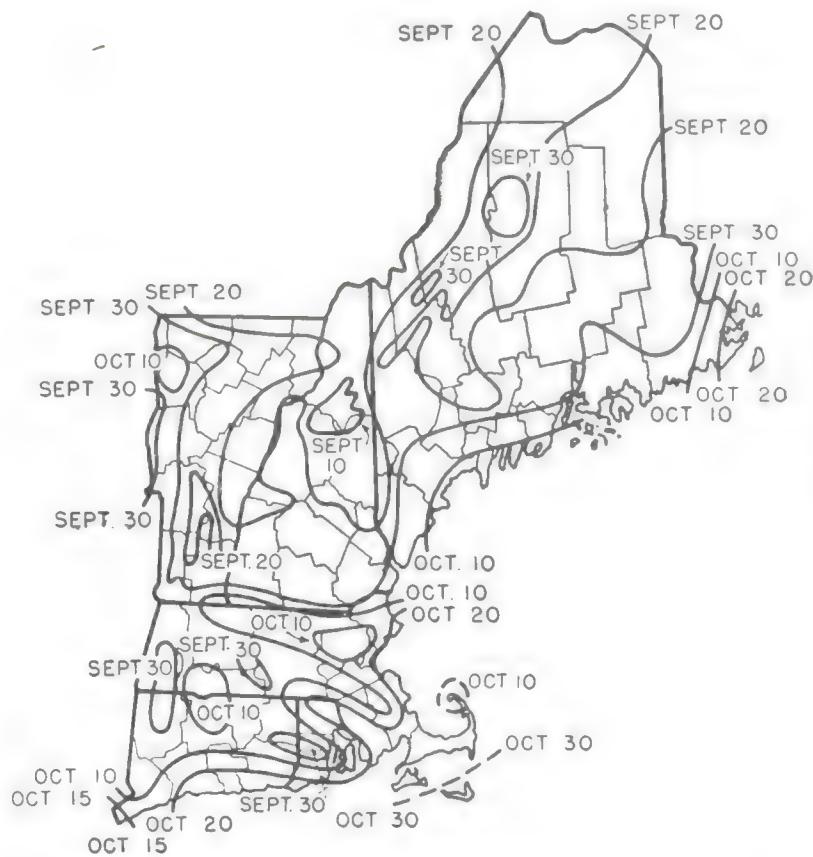


Figure 11. Approximate dates of the first fall frosts.

try to hold out until then. In addition to yielding superior grass, letting the plants mature also insures you of a supply of good seed for next year's planting.

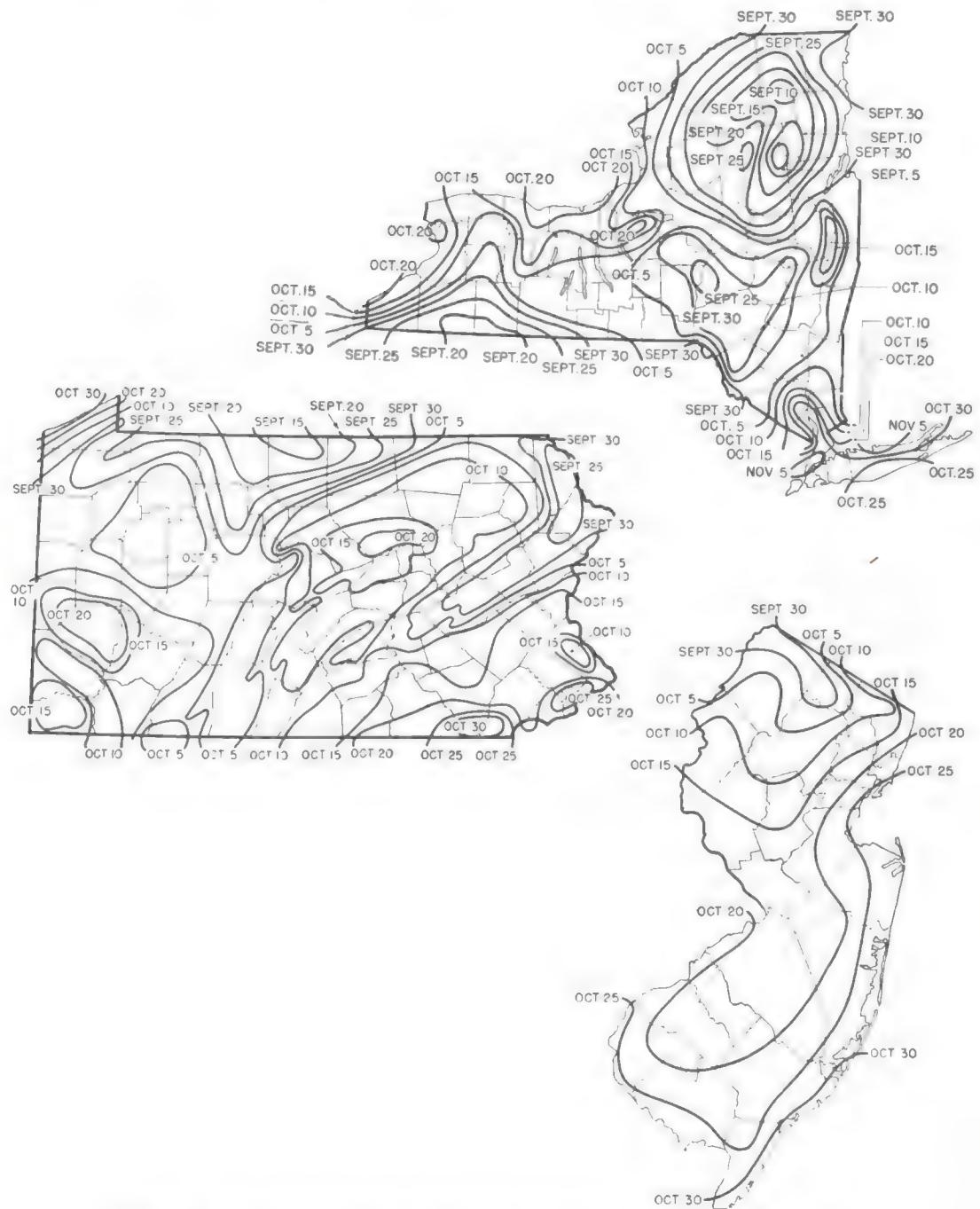


Figure 12: Approximate dates of the first fall frosts for New York, New Jersey and Pennsylvania.

Part VI – Drying

Letting the marijuana mature before harvesting has still another advantage in that it shortens the length of time necessary for proper drying. After cutting the plants down, all one needs to do is hang them up in a window or a warm attic until they're crumbly. This usually takes about a week. If your plants are particularly resinous, they may not dry out completely. In this case, strip off the leaves and seeds and put them in a gas oven (on a cookie sheet), heated *only* by the pilot light, for a few hours. Under no circumstances should the oven heat be turned on above pilot light strength. Doing so would only serve to cook the grass rather than dry it. After drying, crumble up the grass a bit and put it away in tightly sealed jars. If you don't have a gas stove, your only alternative is to pray for dry weather. I refuse to recommend using an electric oven for drying grass because it cannot maintain a low even temperature.

If you are lucky enough to grow a crop of *really* resinous ganja, you might try pressing it into bricks. This is the traditional Indian technique, and it is used only on prime flowering tops that consist mainly of sticky flowers. Leaves don't brick well, since they tend to crumble rather than stick together. The Indians make their "flat ganja" in this way: during the day, the fresh cut tops are put out in the sun to dry. At night, the tops are stacked into a pile and heavy weights are put on them. The next day, the pile is unstacked and the tops are exposed to the sun again. At night, the tops are piled up again and weighted down. This procedure is repeated four or five times until the ganja is thoroughly dry and

completely flat. All the leaves will have crumbled away, and only pressed flowers remain. I call this "flatbush". Figure 13 is a picture of some home pressed *Cannabis*.

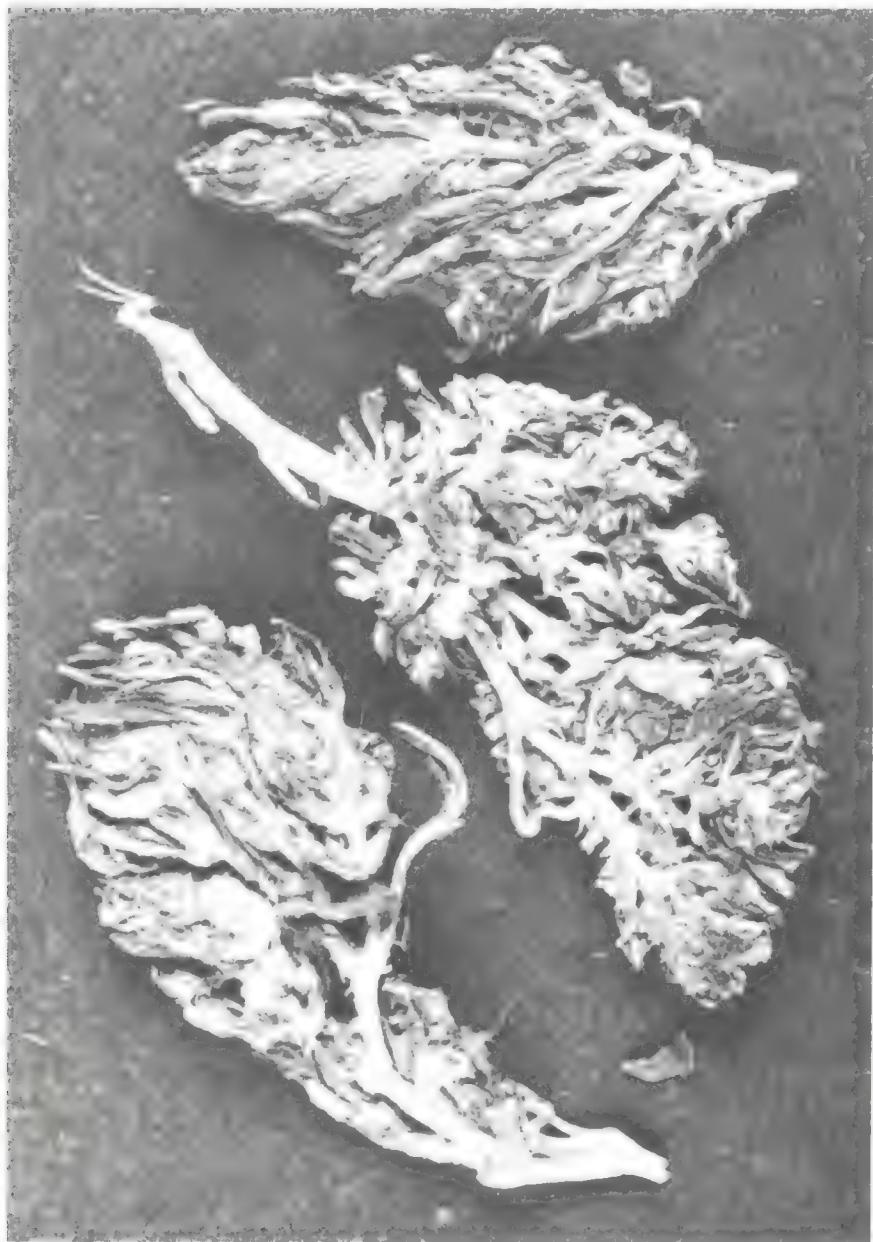


Figure 13: New England flatbush, ready for smoking. It was made from branchlets similar to the one shown in Figure 10. Note the absence of leaves, which crumbled away during the pressing process.

Part VII – An Interesting Variation

In India, most *Cannabis* cultivators are careful to remove all the males from the field before they shed their pollen. As a result, the females flower continually but never set seed. They live for quite a bit longer than their seed-bearing counterparts. Consequently they have that much more time to produce resin. When these flowering tops turn yellow, they are collected and compacted into bricks of ganja⁴.

The technique of inducing the females to flower without setting seed works best in places with a long, warm growing season. In temperate New England, with its short, cool growing season, the frustrated females, or “mad bush” as they’re called in Jamaica, don’t produce that much more resin than they would if they were pollinated by the males and allowed to set seed. In the literature, there has always been an argument about whether or not removing the males makes a significant difference in the quality of the final product. In India, people say that seedless females are more potent than females with seed; in Jamaica, people say that ganja with seeds smokes and tastes better than seedless and is just as strong. Who is one to believe? It seems to me that there is really no absolute answer to the question. Under certain growing conditions, one cultivation technique may work better than another, while under different

⁴To make hashish (charas) from ganja, the Indians take the flowering tops and rub, beat or scrape the resin off of them. Pure hashish is pure resin, with no other plant material present. Needless to say, one needs incredibly resinous plants in order to make hashish.

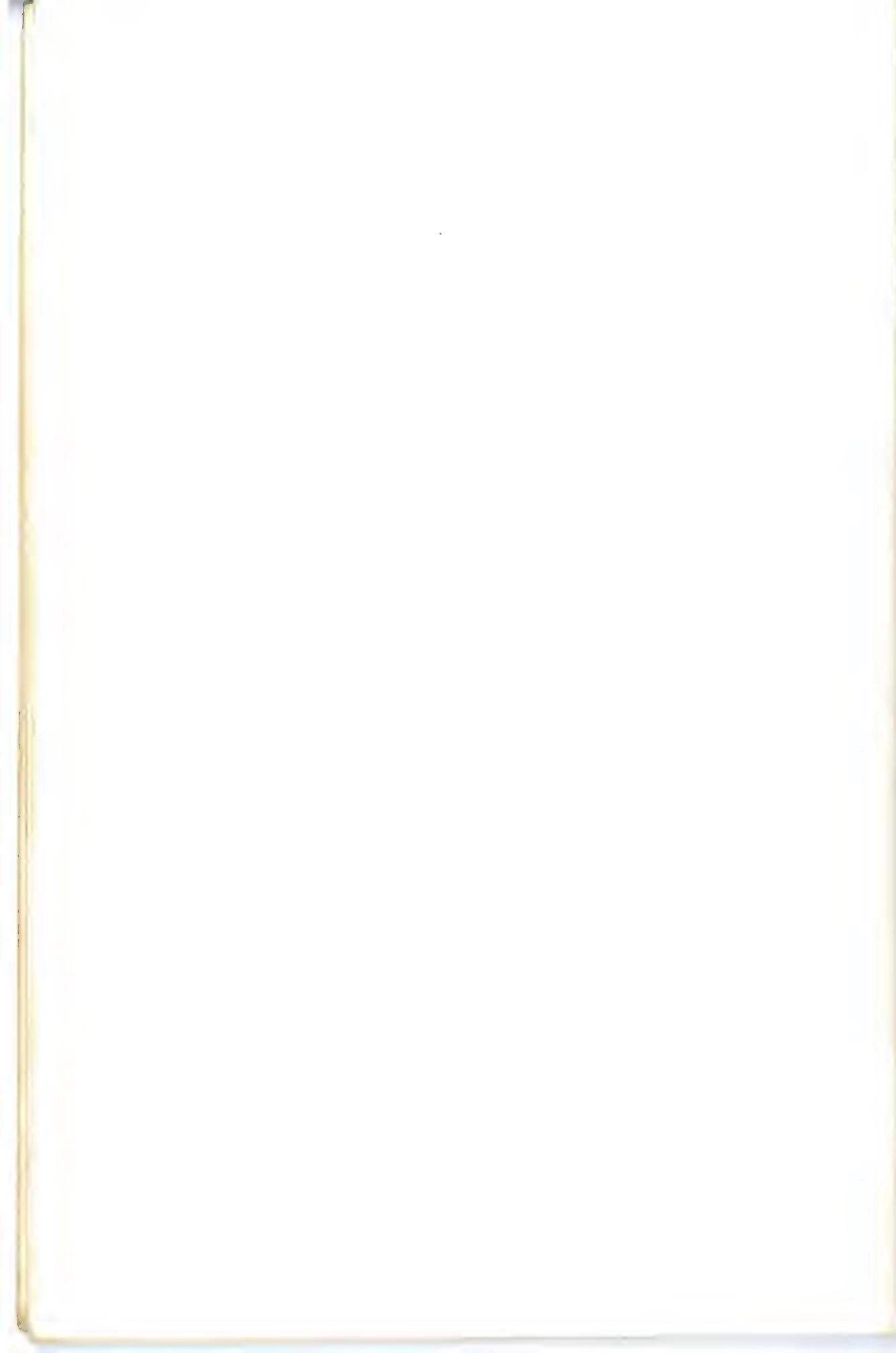
conditions a different technique may be appropriate. All one can do is experiment to find out what works best in a given area. Grow your own mad bush and see how it compares to a crop with seeds.



Figure 14: New England mad bush.

Develop Your Own Technique!

This book is not intended to be the final truth about ganja culture. Rather it is more like a lump of raw clay from which new growing techniques, specially adapted to north temperate climates, can be molded. The sooner one learns how to produce quality marijuana, the sooner one will be free of the rip-off scene in the streets. Ganja is just a plant, and, as such, it gives freely of itself to those who take the trouble to care for it.

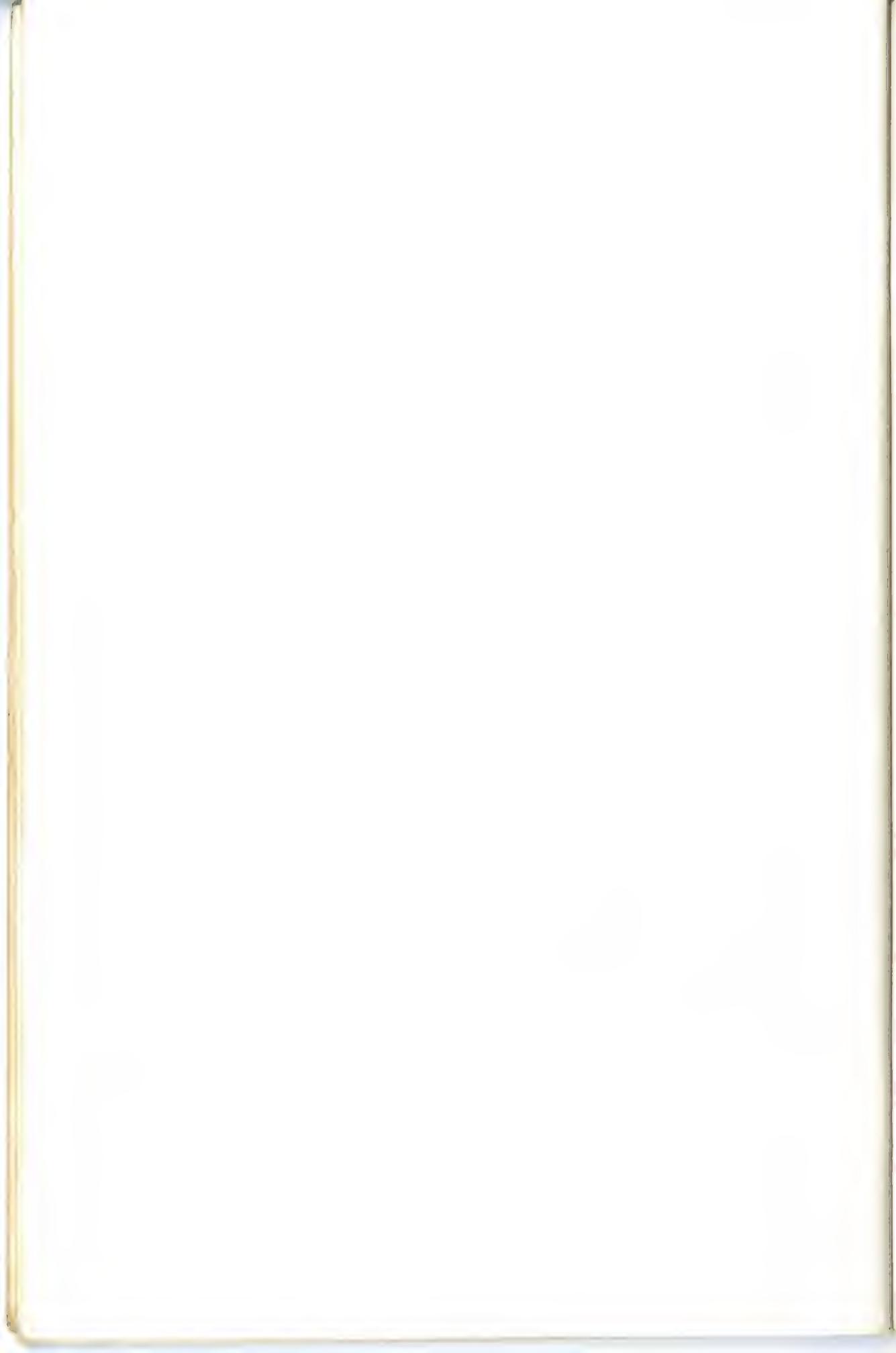


Section II

How To Select Strains Of *Cannabis* Specially Adapted To New England

* Including *

A Completely New Technique For
Distinguishing Male From Female Plants
At The
Seedling Stage



Over the centuries, one problem in the cultivation of *Cannabis* has remained unsolved – how to distinguish the male plants from the female plants at an early enough age so that one can avoid planting the useless males altogether. Ordinarily, it is not until the plants start to bloom that the males can be differentiated from the females. By that time, however, it is too late to do anything constructive about it. Half of the crop is basically worthless, and the grower is stuck with it. Were it possible to identify the males before they were planted out, or shortly thereafter, one could simply not plant them or pull them up and replace them with known females. By doing this, one would end up with a crop consisting entirely of females and double the yield for the same area.

In India, it is reported that there are certain “ganja doctors” who can distinguish the males from the females when they are very young. These ganja doctors go through newly planted marijuana fields and rip out the males. The farmer follows behind the doctor, replacing these rejects with females. As far as I know, the secret on which these ganja doctors base their decision about the sexuality of a given plant is a mystery to the scientific world. That is, it was a mystery until now, for I believe that I have come up with a possible explanation for the ganja doctors’ abilities.

* * *

It has been known for a long time that *Cannabis* is a short day plant. In fact, *Cannabis* was the first plant in which it was conclusively shown that flowering was related to the length of the day. Roughly speaking, when there is more than thirteen hours of light, the plants will produce leaves, when there is less, they will produce flowers. For a long time, it has also been known that you can get *Cannabis* to flower at a very early age (less

than a month old) simply by exposing it to short days from the time it germinates. The scientists, however, being scientists, failed to realize the practical implications of this precocious flowering. They merely reported it as a botanical curiosity. It has remained for someone interested in the practical as well as theoretical details of ganja cultivation to realize that by getting *Cannabis* to flower precociously, one could distinguish the males from the females at an early enough stage so that one could avoid planting the males altogether.

Figures 15 and 16 illustrate the male and female plants flowering at two inches in height and two months of age.

It is not completely easy to induce precocious flowering, however. If the plants are started when the days are too short, say in early February, they will flower, but they will probably die shortly thereafter. They'll die just like big marijuana plants do after they flower. If the plants are started too late, on the other hand, they won't flower at all. Ideally, what you want is for the plants to go through the initial stages of flowering, just enough to display their sexuality, and then to revert to vegetative growth.

In order to achieve this ideal, several factors must be taken into consideration. First, and most important, it must be realized that the daylengths that stimulate flowering in seedlings are not necessarily the same as those that stimulate flowering in the mature plant. For example, I have grown a strain of *Cannabis* that will flower precociously in the spring, as long as the seeds are planted before March fifteenth. At this critical point, the days are almost exactly twelve hours long. The same strain, after growing out of its precocious flowering, commenced blooming again toward the end of July, when the days were around fourteen hours. Thus, in terms of this particular strain, there is a differential sensitivity to daylength of two hours between the seedling and the adult.



Figure 15: A flowering male plant, three inches tall. The arrow indicates the elongated second internode.



Figure 16: A female plant, two inches tall, flowering precociously.

- a.* Side view. Note the absence of the elongated second internode. The arrow indicates the persistent cotyledons.
- b.* Top view. The arrow indicates the thread-like stigmas of the female flowers.

A second factor that must be taken into consideration is that not all strains of *Cannabis* show the same sensitivity to day length. Some strains, like the one I described above, flower *early* (by the end of July), others flower *late* (by the end of August) and still others flower *very late* (by the end of September). These same differences also apply when it comes to precocious flowering. The early-blooming strains, remember, flower precociously if planted any time before March fifteenth. The late-blooming strains, on the other hand, flower precociously only if planted before mid-February, which is a bit too soon to make them suitable for planting out. The graph shown in figure 17 contrasts the *potential* flowering periods for two distinct strains of *Cannabis* that I have investigated.

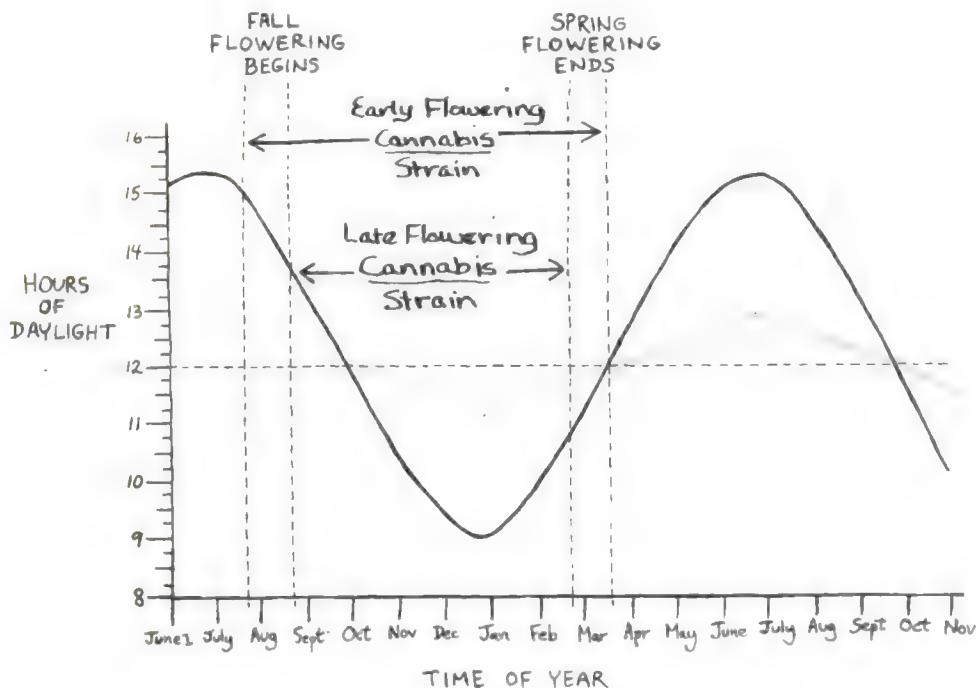


Figure 17: Day lengths in the vicinity of Boston, Massachusetts. Arrows indicate the limits of the potential flowering periods for early and late flowering strains of *Cannabis*.

As the graph indicates, the early-flowering strain is able to bloom over a wider range of daylengths than the late-flowering strain. For New England, an early-flowering strain is ideal. Not only does one get the benefit of precocious flowering in the spring, but one also gets the benefit of a much longer flowering period in the fall. In New England, early-flowering strains actually come much closer to achieving the Jamaican ideal of full ripeness than more potent late-flowering strains. Selecting the right strain is the key to growing ganja in New England.

* * *

The only problem that remains to be solved now is how to tell the seeds of an early flowering strain from the seeds of a late-flowering strain. Unfortunately, I have not looked at enough seeds to come up with a completely fool-proof system, but the work of Ernie Small has given me some good ideas on the subject. According to Small, there is only one species of *Cannabis*: *Cannabis sativa*. This single species is divided into two subspecies: one grown for its fibers (and low in THC) and one grown for its resin (and high in THC). Both of these subspecies are further subdivided into two varieties or phases: a domestic or cultivated phase and a wild or weedy phase, that has escaped from cultivation. The weedy phase of *Cannabis*, regardless of whether it was derived from rope or dope strains, is characterized by having relatively small seeds that are covered by an extensively marbled perianth. (This is the name given to the papery layer that sometimes surrounds a marijuana seed.)* This marbling makes the seeds appear streaked.

*It has been speculated that this marbling serves to camouflage seeds once they fall to the ground.

The cultivated phase of *Cannabis*, on the other hand, again regardless of whether it was grown for dope or for rope, tends to possess larger seeds that lack the marbled perianth altogether, making the seeds appear finely veined. Figures 18 a and 18 b illustrate these two types of seed.

Figure 18:
Ganja seeds.



- a. Seeds from a "cultivated" phase of *Cannabis* grown for resin production. Note the absence of the perianth.
- b. Seeds from a "weedy" phase of *Cannabis*, likewise grown for resin production. Note the "marbled" perianth.

In temperate as well as tropical climates, early-flowering would tend to be a characteristic of wild marijuana plants, since it would shorten the length of time necessary for seed production, thereby increasing the likelihood of seed set under adverse conditions. In New England, frost would be the selection pressure that would favor early-flowering, while in a more tropical setting, the recurrence of extensive droughts or early monsoons would encourage plants to ripen their seed as soon as possible. Granted, early-flowering strains do not produce as much seed as late-flowering strains, but the consistency with which they produce the smaller amount is greater. Such consistency is of the utmost importance to a strict annual like *Cannabis*, that has to come up every year from seed.

Despite the fact that late-flowering is an extravagance that works against the long range survival of *Cannabis*, it continues to persist in many different strains. This is due primarily to the work of human beings who went out of their way to selectively cultivate and breed late-bloomers because they produced more resin than their early-blooming counterparts. As a result of this selection, there are many strains of *Cannabis* that cannot survive without human assistance. Certainly, these strains can exist on their own for a time, but eventually, some disaster will hit the plants before the seeds are ripe and wipe out the entire population. Either that, or the population will slowly revert to the wild, more self-sufficient, early-blooming phase.

The conclusion to be drawn from all of this is that in *Cannabis* a marbled seed may often be associated with early-flowering. This association may not always hold true, but it should hold true often enough to give people something to work with. The seed shown in figure 18-b flowered precociously in March, and bloomed again in July. It also got people very stoned. It corresponds to Small's weedy phase. The seed shown in figure 18a was non-precocious in March and did not start blooming in

the fall until the end of August. It represents Small's cultivated phase.

Practically speaking, then, if you find marbled seeds in a bag of good marijuana, chances are they will give rise to an early-flowering strain of *Cannabis*. Should you come across marbled seeds that don't give rise to early-flowering plants, don't assume that there's no such things as an early-blooming strain of *Cannabis*. Believe me, the seeds are out there, ready to be planted. It's just a matter of finding them. Keep trying new varieties of seed, marbled or unmarbled, until you locate an early bloomer. When you do, make sure and let the crop go to seed. Don't go removing the males to make mad bush. The perpetuation of a good strain should always take precedence over all other considerations. *Cannabis* seeds, if stored at room temperature, lose their viability after a year or two. If kept in sealed containers in the refrigerator, however, (see Toole, Toole and Nelson 1960) they can last for up to eight years without any appreciable loss in viability.

* * *

If all goes well, the seedlings should start flowering a month after you plant them, provided they aren't given any artificial light. Just as they do in the fall, the males will flower before the females, with the first indication being the lengthening of the second internode above the cotyledons (figure 15). This lengthening will raise the males head and shoulders above the females. After elongation occurs, the flower buds will appear at the top of the plant.

The precocious flowering of the female plant likewise mirrors the flowering of the adult female. The plants stay short in comparison to the male plants, showing no elongation of the second internode. About a week after the male flowers appear, female flowers will appear, bunched together around and about the shoot apex (figure 16).

John Schaffner, in 1923, was one of the first people to describe the precocious flowering of *Cannabis* seedling. He also noted that the seedlings grew out of this flowering state quite readily:

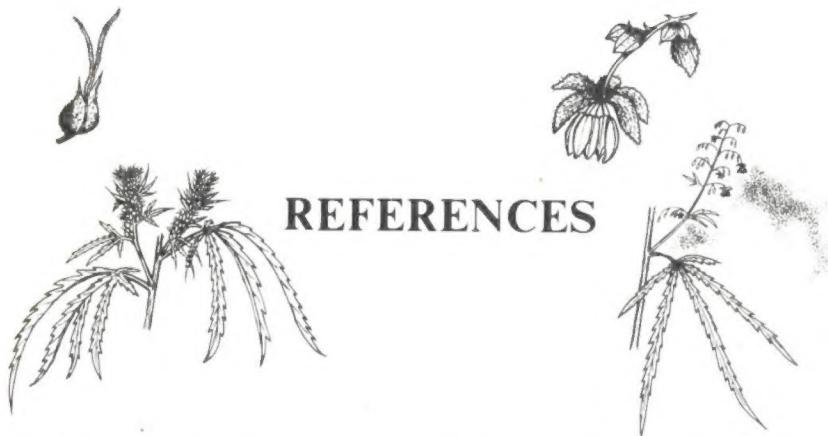
Another remarkable phenomenon in the short-lived winter plants is the frequent rejuvenescence which takes place in plants that are becoming senile just about the time that the lengthening daylight period is beginning to have a decided effect on the functional activity. Plants which appear to have gone into the last stages preceding death may develop one or more side buds that begin a vigorous and normal period of growth, the same as a seedling beginning its vegetative cycle at the time, while the upper part of the plant with the old inflorescence and seed dies away in the same manner as the entire individual of an earlier date does after passing through the short inflorescence and fruiting period.

Remember, Schaffner is talking about plants started in December, when the days are *very* short. Plants started in early March should not come anywhere near as close to death as the ones he describes.

In order to make precocious flowering a truly efficient cultivation technique, one needs to find an early-flowering *Cannabis* strain, and then work out the proper day length that will stimulate the males to elongate, but will not stimulate the females to flower. In this way, one can identify the females without actually inducing them to flower. The advantage of this is that it keeps the female seedlings from wasting precious time and energy on the production of flowers when they should be producing leaves.

* * *

While precocious flowering *could* be the basis of the Indian ganja doctors' ancient knowledge, it could *also* be a completely modern technique. Regardless, its implications should start cropping up in ganja patches everywhere.



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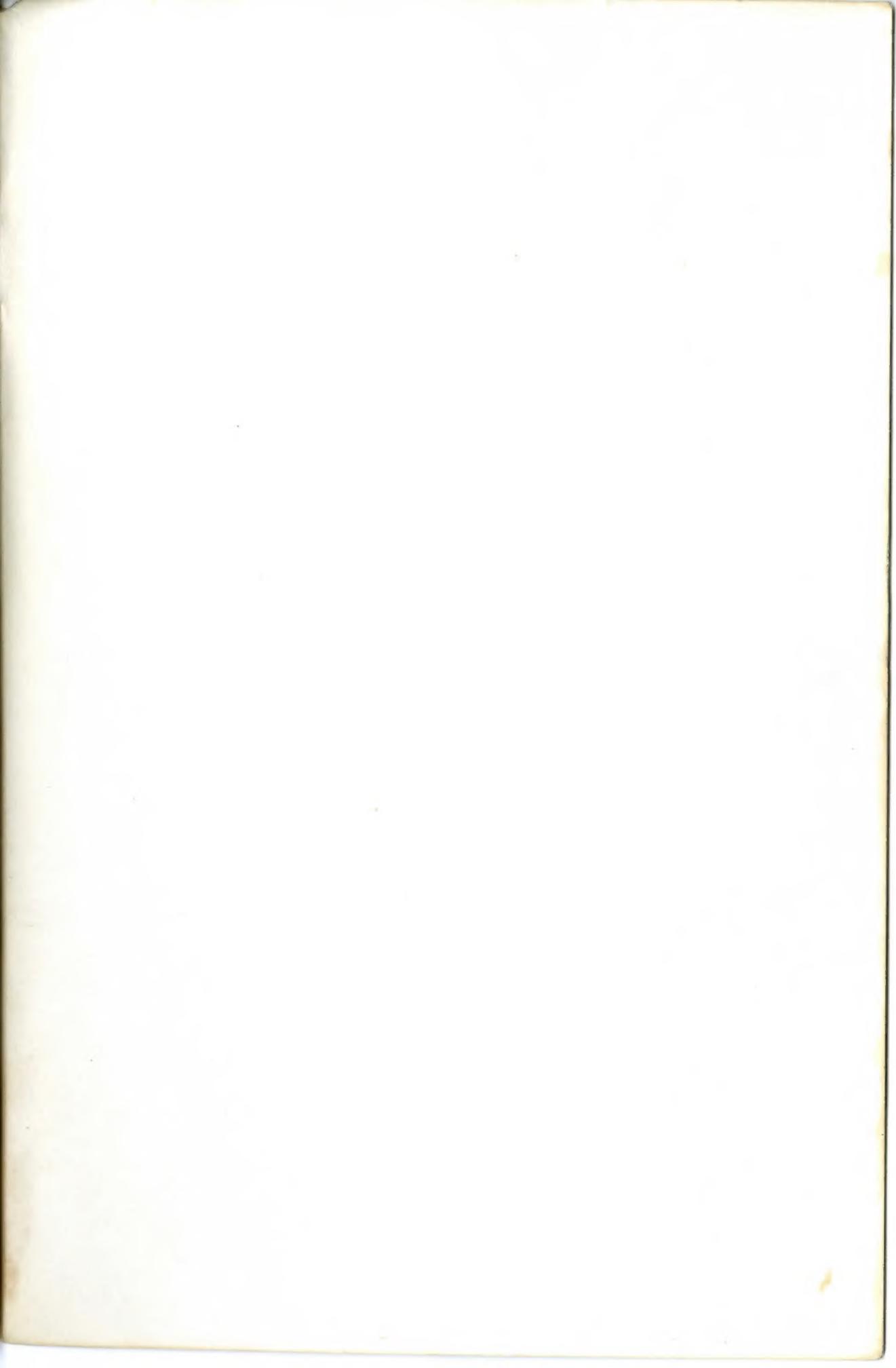
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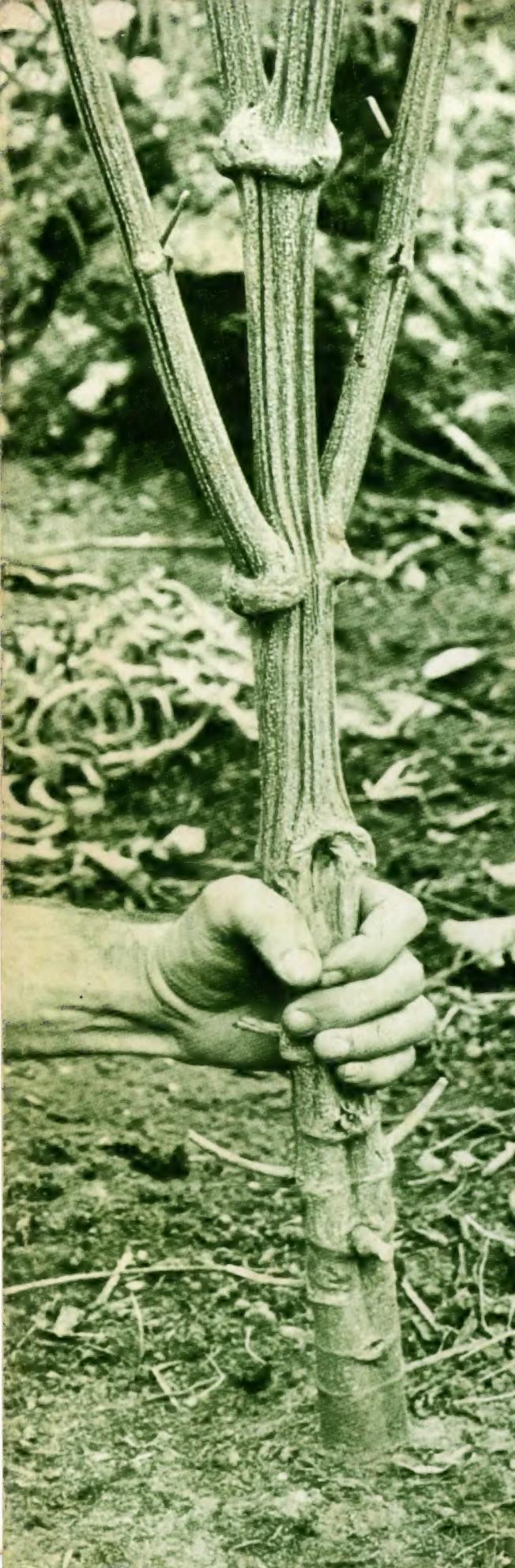
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Peter Oakum is a horticulturist who has been experimenting with methods of growing Marijuana in New England for several years. Herein lies the distillation of his experience to the most effective method yet found for the northeastern climate.

Additional maps and commentary show how easy it is for folks in the rest of the northeast to adopt this method to their growing conditions.

This book is completely accurate. It will stand on its own in any circle: botanical, agricultural, or old-fashioned hippy.

Section One tells how to grow marijuana in the Northeast. Section Two tells how to select strains of cannabis especially suited to New England. A special feature is Peter Oakum's completely new technique for distinguishing male from female plants *at the seedling stage!*